

REMARKS/ARGUMENTS

Upon entry of the present amendment, claims 1-8, 10-15, and 35-38 will be pending in this application and presented for examination. Claim 3 has been amended. Claim 38 is newly added. No new matter has been introduced with the foregoing amendment and newly added claim. Reconsideration is respectfully requested.

I. FORMALITIES

Claim 38 is newly added and finds support in claims 1 and 14. The Examiner acknowledged that claim 14 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 38 recites the base claim with the allowable features of claim 14. Therefore, claim 38 is allowable. Claim 3 has been amended and finds support in paragraph 19, page 5. As such, no new matter has been introduced and Applicants respectfully request that the new claim and amendment be entered.

II. REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

The Examiner rejected claim 3 under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite. To the extent the rejection is applicable to the amended set of claims, Applicants respectfully traverse the rejection.

Applicants have corrected some minor typographical errors in claim 3. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection.

III. FIRST REJECTION UNDER 35 U.S.C. § 103(a)

Claims 1-8, 10-13, 15, and 35-37 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over U.S. Patent No. 6,645,569 ("Cramer *et al.*"). The Examiner states that Cramer *et al.* discloses a process of coating textile materials including all natural and synthetic textiles with inorganic nanoparticles including metal oxide particles. The Examiner states that the patent differs from the claims because patentee does not state that the nanometer particles are

embedded, or that they are distributed at or near the surface of said textile and polymer system.

In response, Applicants respectfully traverse the rejection.

As set forth in M.P.E.P. § 2143, [t]o establish a *prima facie* case of obviousness, *three* basic criteria must be met. *First*, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *Second*, there must be a reasonable expectation of success. *Finally*, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

All three elements set forth above must be present in order to establish a *prima facie* case of obviousness. Applicants assert that a *prima facie* case of obviousness has not been established for the following reasons; 1) there is no suggestion or motivation to modify the references; 2) there is no reasonable expectation of success; and 3) the cited references do not teach or suggest all the claim limitations.

1. There is no Suggestion or Motivation to Modify the Reference

Applicants state that there is simply no motivation or suggestion provided in the cited reference to modify its teaching in the way the Examiner has contemplated. As the Examiner is aware, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the reference or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Cramer *et al.* is concerned with imparting surface modifying benefits for all types of soft surfaces and in some instances hard surfaces. (col. 1, line 65 to col. 2, line 3). Cramer *et al.* teaches the advantages of nanoparticle coatings over other types of surface modifying agents is that they can provide films on the surface that are essentially invisible. (col. 2, lines 50-53). The clearest description of Cramer *et al.* is in Figures 1-3 wherein schematic views of a soft surface are set forth. The individual nanoparticles are designated by reference number 22 and the layers are designated by reference number 24. The nanoparticle coating is deposited as an invisible film, preventing stains from setting into the soft surface or fabric (col. 30, lines 15-28). The nanoparticle coating of Cramer *et al.* comprises multiple effective layers of nanoparticle sheets that provide the benefit. During the wash process or stripping treatment, at least one top layer of the nanoparticle coating is removed, taking the stain along with it (Figs. 2 and 3).

In sharp contrast, the present invention teaches and claims a textile material comprising an embedded nanoparticle distributed in a gradually diluted pattern, wherein a higher density is near or at the surface, and gradually decreasing density toward the core.

Cramer *et al.* do not teach or suggest embedded nanoparticles. Under MPEP § 2143.01, in making a *prima facie* case of obviousness, the Examiner's proposed modification **cannot** render the prior art unsatisfactory for its intended purpose.

MPEP § 2143.01:

If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, **then there is no suggestion or motivation to make the proposed modification.**[Emphasis Added] *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

In this regard, if the nanoparticles of Cramer *et al.*, were to be ***embedded*** the fabric would be ***unsatisfactory*** for its intended purpose. Cramer *et al.* teaches a nanoparticle coating comprising multiple effective surface layers of nanoparticle sheets that during the wash process or stripping treatment, at least one top layer of the nanoparticle coating is removed, taking the stain along with it (Figs. 2 and 3). By embedding the nanoparticles as is currently taught and claimed, the top layer of the nanoparticle would be unsatisfactory for its intended purpose. Therefore, Cramer *et al.* in no way make the instant invention obvious.

2. There is No Reasonable Expectation of Success

In addition, there is no reasonable expectation of success that the modification that the Examiner contemplates will succeed. "Both the suggestion and the expectation of success must be found in the prior art, not the Applicants' disclosure." *In re Dow Chem. Co.*, 5 U.S.P.Q.2d 1529, 1532 (Fed. Cir. 1988).

There is no reasonable expectation that the modification that the Examiner contemplates will succeed. Applicants teach and claim a nanoparticle processed textile and polymer system comprising:

"...an embedded nanoparticle wherein said embedded nanoparticle is distributed in a gradually diluted pattern, having a higher density at or near the surface of said textile and polymer system and gradually decreasing density toward the core of said textile and polymer system;..."

Applicants' claimed feature of having *embedded nanoparticles* wherein the nanoparticles show high density at or near the surface with a gradual decreasing density toward the core of the fiber or polymer, is simply not taught or suggested by Cramer *et al.* In fact, such a modification would render the coating of Cramer *et al.* inoperable. Thus, a skilled artisan would have no expectation that such a modification would succeed. Therefore, Applicants respectively request that the Examiner withdraw the rejection.

3. The Reference Does Not Teach All Limitations of the Claims

The prior art reference must teach or suggest all the limitations of the claims. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Applicants assert that the cited reference does not teach or suggest all the features of the claims and therefore, the obviousness rejection cannot be maintained.

Cramer *et al.* simply does not teach an embedded nanoparticle. Applicants teach a completely different type of nanoparticle composition wherein the nanoparticles are *embedded* in a textile in a gradient fashion. Claim 1 clearly sets forth that the textile and polymer system of the present invention comprises *an embedded nanoparticle*, "wherein said embedded

nanoparticle is distributed in a gradually diluted pattern, having higher density at or near the surface of said textile and polymer system and gradually decreasing density toward the core of said textile and polymer system."

As discussed in detail on pages 7-8 (paragraphs 25-29) of the specification, it is believed that the amount and nature of the embedded nanoparticles of the present invention are based upon the theory of diffusion. Advantageously, if the particles diffuse into fibers (not on the surface as discussed in Cramer *et al.*), the textiles can survive repeated launderings. In addition, in certain embodiments, the embedded nanoparticles *impart unique* functionalities such as coloration, a waterproof finishing, soil repellent finishing, fire resistance finishing, and the like. As such, the instant invention is clearly unobvious in view of Cramer *et al.*

IV. SECOND REJECTION UNDER 35 USC § 103(a)

Claims 1, 6, 8, 10-13, 15, 35-37 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over CN 1241662 (Abstract) and over CN 1306117 (Abstract). CN 1241662 teaches that silver and silver oxide are between or on fabric fibers to treat infection from wounds and fungi. CN 1241662 teaches fabric fibers wherein silver grains are adhered and which has a surface layer of silver oxide and core of metal silver.

From this passage, it is simply not clear what is being taught. The only thing for sure is that CN 1241662 certainly does not teach or suggest a textile material comprising an embedded nanoparticle distributed in a gradually diluted pattern, wherein a higher density is near or at the surface, and gradually decreasing density toward the core as is currently taught and claimed.

CN 1306117 does not supply the deficiencies of the primary reference. CN 1306117 teaches an antibacterial flexible silver material features that the superfine particles, which has silver core, surface layer of silver oxide and diameter of 1-900 nm are attached between basic units or to basic units of flexible material.

CN 1306117 simply does not teach or suggest a textile material comprising an embedded nanoparticle distributed in a gradually diluted pattern, wherein a higher density is near or at the surface, and gradually decreasing density toward the core. Advantageously, in certain instances,

the nanoparticle processed textile and polymer systems of the present invention have an embedded nanoparticle which *imparts a unique* functionality into the textile. Suitable functionalities include by way of example, coloration, a waterproof finishing, soil repellent finishing, fire resistance finishing, wrinkle free finishing, anti-UV finishing, antimicrobial finishing, antiwarfare finishing, antibiowarfare and antistatic finishing. Therefore, Applicants respectfully request that the Examiner withdraw the rejection.

Applicants note that the Examiner included two additional abstracts on PTO-892, but did not use the abstracts in any rejection. Apparently, CN 1123350 and CN 1293278 were included to show the state of the art.

V. THIRD REJECTION UNDER 35 USC § 103(a)

Claims 1, 6, 8 10-13, 15, and 35-37 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over FR 2 799 392 (Abstract). This Abstract teaches preparing stable dispersions in aqueous or alcoholic media of metal oxide elementary particles. The invention is useful for making antistatic fibers, yarns, textiles, sensors, gas detectors, etc.

There is simply no teaching or suggestion of a textile material comprising an *embedded nanoparticle* distributed in a gradually diluted pattern, wherein a higher density is near or at the surface, and gradually decreasing density toward the core, as is currently taught and claimed. Therefore, Applicants respectfully request that the Examiner withdraw the rejection.

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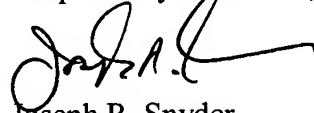
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VI. CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 925-472-5000.

Respectfully submitted,



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